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INTERNING JUNIOR ENGINEER SEMINAR PROGRAM

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U.S. Department of Agriculture
Division of Agricultural Education

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The Tennessee Valley Authority was created by an Act of Congress May 18, 1933. The purposes for which the Tennessee Valley Authority was created in which we are particularly interested are best illustrated by direct quotation from Section 9a and Section 11:

Section 9a:

"The board is hereby directed in the operation of any dam or reservoir in its possession and control to regulate the stream flow primarily for the purposes of promoting navigation and controlling floods. So far as may be consistent with such purposes, the board is authorized to provide and operate facilities for the generation of electric energy at any such dam for the use of the Corporation and for the use of the United States or any agency thereof; and the board is further authorized, whenever an opportunity is afforded, to provide and operate facilities for the generation of electric energy in order to avoid the waste of water power, to transmit and market such power as in this act provided, and thereby, so far as may be practicable, to assist in liquidating the cost or aid in the maintenance of the projects of the Authority."

Section 11 reads in part as follows:

"It is hereby declared to be the policy of the Government so far as practical to distribute and sell the surplus power generated at Muscle Shoals equitably among the states, counties, and municipalities within transmission distance. This policy is further declared to be that the projects herein provided for shall be considered primarily as for the benefit of the people of the section as a whole and particularly the domestic and rural consumers to whom the power can economically be made available, and accordingly that sale to and use by industry shall be a secondary purpose, to be utilized principally to secure a sufficiently high load factor and revenue returns which will permit domestic and rural use at the lowest possible rates and in such manner as to encourage increased domestic and rural use of electricity.***"

One of the very earliest problems with which TVA was confronted was to find a market for the power which it would generate. The entire Tennessee Valley area, except for rural areas, was served by various privately owned utility companies. Under Section 12a of the TVA Act, TVA was required to give preference to public bodies and non-profit organizations. The Authority fostered the organization of various cooperatives and was building distribution lines in rural areas throughout the TVA area before the REA was created.

TVA set up a schedule of wholesale rates together with a schedule of retail rates and made it obligatory that any purchaser of power for resale must conform to the TVA established retail rate for residential use, quoted later. The retail rate, therefore, was a uniform rate applicable to municipalities or cooperatives any place in the TVA area.

At present we have four projects located wholly in Kentucky; one operating partially in Kentucky; projects operating all over Tennessee except the extreme eastern part; the northern parts of Georgia, Mississippi and Alabama. At present we have fifty projects in the TVA area which we have wholly financed or financed partly with TVA, these amounts being given later.

When REA was created, various power companies in the TVA area were building spite lines in an endeavor to prevent the organization of cooperatives in the area which might distribute TVA power at TVA rates. In the earlier stages, TVA was in a position to make loans to cooperatives for the construction of lines or acquisition of existing lines. Several cooperatives were set up by TVA. When REA was created for the purpose of making similar loans, it was felt by TVA, due primarily to their lack of funds, that REA should furnish the necessary financing. Upon several occasions we have endeavored to work out some plan whereby REA could take over TVA's monetary interest in those projects which are jointly financed. Due, however, to legal complications, we were unable to follow this plan.

As time went on, more and more of this spite line work was encountered by TVA, and in the latter part of 1935, and in 1936 and 1937, allotments were made by REA to cooperatives which had been organized under TVA auspices and partially financed by TVA. Many of these allotments were rushed through upon request of TVA based on spite line activity and need for immediate allotment in order to prevent the loss to power companies of the areas proposed to be served by our borrowers. All of the construction in connection with allotments made by us was done by TVA with their own crews. Unfortunately TVA did not supply us with necessary maps, number of consumers, estimated revenue, etc., and, as a result at the beginning of 1938, we found ourselves with some \$2,200,000 loaned to various cooperatives in which TVA had a financial interest amounting to approximately \$750,000. In addition, we found that conflicting instructions and information was being given to these projects by different people in REA who had occasion to visit them. It was therefore decided by the Administrator that, in order to thoroughly protect our loans to these and other cooperatives being organized in the area, better results could be obtained if responsibility for the handling of all REA work in the TVA area was placed in the hands of one man. As a result of this decision, the Administrator wrote TVA the following letter:

Attachment

"March 8, 1938

"Mr. David E. Lilienthal
Director, Tennessee Valley Authority
Knoxville, Tennessee

"Dear Mr. Lilienthal: For some time I have been considering the possibility of designating one man in our organization to handle all phases of our work in your area. I feel that too many people at this end have been corresponding with your Authority and with the various projects in your area. I have also felt that it would be much better if you would designate one man in your organization through whom all correspondence and matters dealing with those projects where you have been doing the construction and those projects where you are to furnish power would be handled.

"I have designated Mr. W. E. Herring as our representative who will handle all matters dealing with such projects. If the suggestion appeals to you, I should be glad if you would give me the name of the man in your organization who will handle such matters. Since Mr. Herring expects to leave here Sunday night, March 13, for Chattanooga, perhaps a reply by wire would be indicated.

"John M. Carmody, Administrator."

A telegram was received in reply dated March 10, as follows:

"John M. Carmody
Administrator, Rural Electrification Administration
Washington, D. C.

Knoxville, Tennessee, March 10, 1938.

Until further notice suggest your representative handle Rural Electrification Administration matters with A. H. Sullivan, Chattanooga.

Tennessee Valley Authority
John B. Blandford, Jr.
General Manager"

General Order #80 was then issued on March 4, 1938, by the Administrator, as follows:

"I have asked Mr. Herring to coordinate all the REA work on projects where TVA is doing construction or furnishing power. In this capacity his responsibilities will cut across those of the several Divisions that heretofore have been handling this work directly. All contacts with the Tennessee Valley Authority itself or with any of the projects described above will be made through Mr. Herring. Incoming and outgoing mail should be handled as he directs.

John M. Carmody, Administrator"

This order was later supplemented on July 14, 1941, by General Order #160, as follows:

"It is essential to the REA program that the highest degree of effective coordination exist between our activities and those of the Tennessee Valley Authority. It is important that responsibility for such matters within REA be more definitely centralized and that General Order #80 be extended by more explicit provisions. To this end and effective immediately I hereby designate Mr. W. E. Herring to have direct and entire supervision of all REA activities within the service area of the Tennessee Valley Authority, reporting directly to me.

"Mr. Herring, in the conduct of his duties under this order, may call upon or utilize the services of such REA employees as he may deem advisable. All contacts or meetings with representatives of the Tennessee Valley Authority, REA borrowers, prospective borrowers, public officials, or any other persons concerning any REA activities in the TVA service area, shall be conducted by him or under his instructions. All incoming mail relating to REA activities in the TVA service area shall be forwarded first to him for appropriate disposition.

"Mr. Herring shall have authority from time to time to prescribe procedures to effectuate the intent of and to implement this General Order. All previous orders or portions thereof, inconsistent with this order, are hereby changed to conform with this order.

Harry Slattery
Administrator"

Under the TVA contracts for power, entered into with each one of the cooperatives, there are certain requirements contained which do not appear in any power contract with a power company in other parts of the country. The reading of this contract indicates that certain requirements are made by TVA as to accounting procedure and the preparation of financial reports.

In 1938 a rather complicated form of monthly operating report was used. This form is very complete and gives the complete status of the project every month. Since TVA had been handling this accounting procedure, we discussed with them the possibility of their continuing this same form of report until we had an opportunity to study it thoroughly and make suggested changes. After much discussion, the present operating report was put into effect July 1, 1940.

TVA has five Division Managers in the area--each Division Manager having a complete staff including a superintendent, several traveling auditors, an engineer, new business representatives, and other personnel. TVA's traveling auditors contacted the projects frequently, checked their accounts, consulted with the bookkeepers, and exercised general supervision over the accounting procedure. As of July 1, 1940, this procedure was changed, and REA was to have

approximately four auditors in the area who would keep in constant touch with the projects and make the necessary audits. The TVA auditors had never made a construction audit. By this time, 1940, the number of projects had materially increased and, since some of them had been operating for as much as four years, it was deemed necessary by REA that construction audits should be made. It was not, however, until the spring of 1941 that we were able to get enough auditors into the area to make the audits we required. This work was all completed by approximately July 1, and since that time our auditors, while fewer in number than originally contemplated, have been contacting the projects as rapidly as possible.

All of the public utilities in the Western part of Tennessee, with one exception, were negotiated for and purchased in the fall of 1938 and were taken over in December 1938 and early in 1939 by various interested cooperatives and municipalities (including the City of Memphis). This acquisition was followed in August 1939 by the purchase of all of the Tennessee Electric Power Company properties in the State of Tennessee for \$78,000,000, and were taken over by TVA cooperatives and municipalities (including the Cities of Chattanooga and Nashville) on August 16, 1939. This purchase involved approximately four million dollars of REA funds.

This purchase was probably one of the largest of its kind consummated in the United States. The TVA took over all of the generating plants, substations and all transmission lines operating at voltages higher than 13.2-kv. Of the total purchase price of \$78,000,000, TVA furnished approximately \$44,000,000. The Cities of Chattanooga and Nashville, together with the smaller municipalities furnished approximately \$31,000,000 of the purchase price, and the cooperatives furnished the balance, amounting to approximately \$3,000,000. This purchase represented the final solution to TVA's problem of finding a market for its enormous power output and opened the way for a clear demonstration of the application of the so-called "yard-stick" principle as applied to rates of the TVA. These negotiations were finally concluded after months of negotiation with the Power Company. Since the acquisition included on the part of the cooperatives, numerous small communities and by that is meant communities with consumers ranging up to 400 or 450 meters, the result was that the consumer density per mile of line showed and still continues to show a higher figure than is usually encountered on the cooperative rural lines. Generally speaking the consumption on the lines acquired was high per consumer, due to the activity of the Power Company in building load. This then, due to the revenue obtained, opened the way for the future construction of lines in the areas with lower consumer density.

Prior to the acquisition, rapid surveys were made on each cooperative to determine the possibility of line extensions into areas where service was not available. It was found that the purchase of these properties would enable the cooperatives to construct new lines to serve hundreds of additional persons who were not receiving central station service, and who otherwise would be precluded from receiving service. This was the legal justification for REA participation in the purchase. In addition to the new lines proposed to be

constructed immediately as a result of the acquisition, it is anticipated that the increased revenues derived by our borrowers from the operation of the acquired properties will in time allow the cooperatives to provide complete area coverage in their areas. This, of course, would involve the construction of additional lines, which otherwise would not meet our minimum requirements.

The Mississippi Power Company properties in Northeastern Mississippi were acquired in January, 1940, and the Alabama Power Company properties in Northern Alabama were acquired in July, 1940. As would be expected, in all the above purchases we acquired properties that had been constructed under various specifications of the different companies. Too, we found lines operating at 2.3, 4.0 and 6.6-kv, all of which were delta connected. Many of these needed to be converted.

Due to these various conditions, the construction of new lines on existing projects and the setting up, organizing and constructing of new distribution systems on new cooperatives, entailed a large amount of work. I found it necessary to spend approximately one-half of my time in consultation with boards of directors and superintendents and managers of the various projects. In 1941, approximately one-third of my time was spent in the field.

With the acquisition of the properties noted above and two or three acquisitions since then, the State of Tennessee is now entirely served by either municipally or cooperatively owned lines, with the exception of the Eastern part of Tennessee, where a subsidiary of the Cities Service Company operates, and one small plant operating in western Tennessee. This latter plant would have been acquired by a cooperative, but the owners had an exaggerated idea as to its value, and hence it was not purchased.

In the fall of 1939 I obtained an engineer who worked directly under my supervision and who continually traveled from one project to another in connection with various engineering matters, line extensions, changes in metering points and other similar matters. In June 1941, an additional engineer and administrative man was obtained, making a total force of only three men to handle the area.

It might be added that throughout all the work after I took charge, TVA gave us the maximum amount of cooperation. Had it not been for the cooperation of TVA, its Division Managers, and the Division Managers' personnel, it would have been impossible for one person to have carried on the work satisfactorily. The data furnished later hereafter will give some idea as to the increase in revenue, mileage, consumers, kilowatt-hour demand, and kilowatt-hour usage obtained in the area since we took over direct charge.

In connection with new line extensions in the area, several different plans have been followed. In its earlier work TVA would canvass an area and have the people sign up for definite equipment which they agreed to purchase and place on the line. After a comparatively short period, it was found that this did not work out satisfactorily and TVA established a different basis of pay-out

possibility--it being a requirement that 662 kilowatt hours per month per mile of line must be signed up for prior to any allotment being made.

After a trial, this was not found to be satisfactory. In agreement with us, it was decided to establish a basis of \$12.00 per month per mile of guaranteed revenue for a period of not less than three years. It was found that this procedure worked out very satisfactorily, and was followed until May 1940.

A conference was held in Knoxville between officials of both agencies to discuss the problem of expediting construction of new lines, thus providing greater area coverage. In order to get the larger area coverage desired, it was agreed that we would finance construction of lines for a sign-up of \$8.50 per month per mile.

The experience of existing cooperatives showed the consumer usage had been increasing materially from year to year. Meanwhile, REA had liberalized the amortization of its loans to borrowers, changing the repayment period from twenty to twenty-five years. This allowed a development period of approximately seven years in which the projects could build up their revenue from the \$8.50 sign-up to a point where it would be sufficient to make the lines self-liquidating. At the time this agreement was entered into with TVA it was realized that \$8.50 per month per mile would not pay out on a project. As stated previously, with the increase in usage and the consequent increase in consumer billing on other projects, it would be but a short time until the new lines would show sufficient revenue to meet all requirements.

One requirement of the TVA power contract is that the purchaser of TVA energy must agree to sell it at the established TVA retail rate, which for residential consumption is as follows:

		Rate
First	50 KWH consumed per month	@ 3¢ " per KWH
Next	150 KWH " " "	@ 2¢ " "
Next	200 KWH " " "	@ 1¢ " "
Next	1,000 KWH " " "	@ 0.4¢ " "
Excess over	1,400 KWH " " "	@ 0.75¢ " "

Minimum Monthly Bill

\$0.75 per Meter.

Payment

Above rates are net, the gross rates being ten percent (10%) higher. In the event that the current monthly bill is not paid within ten (10) days from date of bill, the gross rates shall apply.

In addition to the above residential rate, there is added an amortization charge, which charge is a minimum of 25¢ and a maximum of \$1.00 per month, on the basis of 1¢ per kilowatt hour. Therefore, a consumer using only 10 kilowatt hours would pay the minimum amortization charge of 25¢, while one using 100

kilowatt hours would pay \$1.00. On the commercial and industrial rates, a surcharge of 10% on the amount of the bill is added to the monthly billing.

The wholesale power rate is as follows:

WHOLESALE POWER RATE

Schedule A-1

Rate

Demand Charge:

\$0.90 per KW of demand per month

Energy Charge:

First	100,000 KWH consumed per month @ 4	mills per KWH
Next	200,000 KWH consumed per month @ 3	mills per KWH
Next	700,000 KWH consumed per month @ 2.5	mills per KWH
Excess over	1,000,000 KWH consumed per month @ 2	mills per KWH

Charge for energy in excess of 360 times the demand shall be subject to a reduction of 0.5 mills per KWH for the otherwise applicable rate.

Determination of Demand

Demand measurement shall be made by suitable instruments at the point or points of delivery. Demand for any month shall be defined as the highest integrated simultaneous load during any sixty (60) minute period during the month for which determination is made.

Adjustment of Demand Charge for Power Factor

Demand charge may be adjusted if and when Authority deems necessary to correct for power factors lower than eighty-five per cent (85%). Such adjustment will be made in such manner as to bring the demand charge to the equivalent of eighty-five per cent (85%) power factor.

Minimum Monthly Bill

\$0.90 per KW of demand, but in no case shall the minimum bill be less than the charge for sixty per cent (60%) of the highest demand occurring during any month within the previous consecutive twelve (12) months' period.

Allowance on Sales to Residential Consumers

Authority will adjust bill so that Contractor shall be billed at 2 mills per KWH for at least so much energy as may be sold by Board under the residential resale schedule at 4 mills per KWH.

Discount

Rates above are net.

The present excellent financial condition of practically all of the projects in the area is due in large measure to the fact that we were careful in the preliminary stages to secure sufficient guaranteed revenue to place the lines in a sound position financially. This procedure was felt to be particularly necessary in the TVA area due to the low minimum in the TVA rate. In other areas where the minimums are three or four times those required in this area, lines could be constructed with a lower consumer density than in the TVA area. As stated previously, with tacit agreement of TVA, while we have required prospective members on many of the projects to sign contracts for a period of three years, guaranteeing certain monthly minimums in excess of the TVA minimum, this is done for two purposes:

- (1) to assure in the early operation of the lines, sufficient revenue in order that the project can meet its obligations, and
- (2) with the expectation that by the end of the three year period these members who have signed for specific monthly minimums will be using a sufficient amount of current so that their bills will equal or be in excess of their guaranteed minimum.

However, we do have a few projects which are so-called "inherited" projects which were originally allotted on a basis of consumer density. These later were able to secure TVA energy, but the minimum already established which was higher than the TVA minimum was used.

Otherwise the procedure of organizing a cooperative in this area is the same as that in any other part of the country. The Loan Agreements are practically the same. The only variation in the various contracts which are signed by the cooperatives is probably in the Power Contract with TVA, considered above.

Short Form Contracts:

One procedure which has been followed in the TVA area and which I do not believe is being followed to any extent in other parts of the country, is the use of the so-called short form contract. Immediately after the acquisition of the Tennessee Electric Power Company properties, it was found that certain conversion work, rehabilitation and line changes were necessary, and that they must have immediate attention. After discussion with the Administrator, permission was given me to use this so-called short form contract, in order to save time required for advertising and time which would be consumed in putting through the regular form of construction contract. This now has developed into practically a letter to the cooperative from different contractors giving unit prices covering the work required, together with a total price for the work involved. The project then accepts the low bid and signs two copies of the letter from the contractor, which is its acceptance of the contractor's proposal. Work can then proceed immediately.

It has been found that in doing this work that some units necessary were not included in the original contract and they have had to be added as supplemental

units. Practically all of the rehabilitation work which we have done has been on hot lines and, of necessity, the cost has run higher than if the lines could have been de-energized. All prices covering contracts of this kind have been checked with our Engineering Division to see that they were in line, and in all cases the completed work has been entirely satisfactory. The bulk of the poles acquired in the TEP purchase were old untreated chestnut poles, and at the time of the acquisition in 1939, I set up a four-year plan, during which period we would replace all of the existing chestnut poles. This has been a large undertaking with some of the projects where there were five to six thousand poles to be replaced. It is hoped within the next two years, that all these change-outs will be completed and the project systems placed in good condition.

Billing:

In the earlier years, each one of the projects did its own billing. Later, the Central Service billing association was set up, and each project who desired to have the association do its billing took out a membership in the association which cost them \$1.00 for each five hundred members. The association started on a ~~shoestring~~, bought the necessary equipment, and set up a schedule covering the billing which they would do for the project, and are now operating on a sound financial basis. At the present time, all of the cooperatives have this association do their billing. Present charges range from 4¢ per bill to 3.6¢, depending upon the number of users served by the cooperative.

I have felt for some time that these rates for the larger projects were too high, and several discussions have been had with officials of the Central Service Association, covering this matter. It is believed that within a very short time the charges for the larger projects, and by them I mean, those with five thousand or more members, will be reduced to approximately 3¢ per bill.

In addition, the billing association prepares a statistical report for the projects for which a very small additional charge is made. The results so far have proved rather definitely that this procedure is more economical for the projects than for them to do their own billing. In addition, there are other results obtained which could not be secured were the projects doing their own work.

Formerly, meters were read throughout the entire area by the servicemen, but on account of rationing of tires and gasoline practically all projects are now utilizing post card meter reading. The meters in the larger towns which are served are still read by meter readers, as it is possible for them to walk over the relatively short routes inside of towns. The results being obtained from post card meter reading are excellent. This is a result of the full cooperation of the members in this program of saving tires, gasoline, and wear and tear on transportation equipment, and this constitutes a real contribution to the conservation of critical war materials.

Line Construction:

As stated previously, in the earlier stages of our contact with TVA, the Authority carried out all distribution line construction. No contracts were made for

such construction by TVA but the lines were to be built at so-called cost to TVA. We found, however, that the line costs were running higher with TVA than with private contractors, and, beginning the latter part of 1940, we started construction with private contractors on the same basis as in any other part of the country, and we have found that our costs were lower than TVA's. There is undoubtedly good reason for the higher costs with TVA. We found that their engineering costs were very materially higher than when a project engineer was employed. Due to TVA's higher wage scale for workmen in that item alone, they would have a difference of perhaps \$50.00 per mile higher than the ordinary contractor.

It is difficult to make any comparison of costs on different projects due to different topographical conditions, different consumer density and the variation in amount of three-phase line which might be required. In all the TVA construction work only two sizes of conductor were used on the distribution lines, namely, No. 2 and No. 4 A.C.S.R. In this area, with its low retail rates, it is further believed that it is good practice to generally use a larger size conductor than in areas where retail rates were higher. It will be noted in figures to follow that the usage on TVA projects is materially higher than in other parts of the country. With the low TVA retail rate, and the expectation, borne out by past experience, that the load on the lines will build up to a greater extent than in other areas, the use of heavier conductor is justified.

With the experience we have had in the area in line construction, it is felt that we have made engineering mistakes in some cases in that single-phase lines have been extended entirely too far from the source of supply. This has now come up on several of the projects where it has been necessary to add several boosters, and, even with this help, at the ends of some of these long single-phase lines, we are still not able to maintain satisfactory regulation. In my opinion the use of boosters on newly constructed lines is an admission of faulty design in the line.

STATISTICAL DATA

The following statistics are given for the operating cooperatives in the TVA area. These figures are for jointly financed cooperatives and wholly REA-financed cooperatives, and for the fiscal year ending June 30, 1942.

REA investment - that is the balance of advances now owed to REA.....	\$19,250,882
TVA investment.....	<u>2,784,121</u>
Total investment of both agencies.....	\$22,035,003

The REA figures do not include allotments which have been made to projects under construction and not operating.

TVA has made loans to fourteen of the projects in the area. Of the TVA investment, the amount loaned to four of the projects constitutes more than one-half of their total investments varying from \$18,000 as a minimum, to \$522,000 as a maximum on various projects.

The number of projects in operation in the various states is as follows:

Alabama	8
Georgia	2
Kentucky	4
Mississippi	9
Tennessee	<u>27</u>
Total	50

Miles of line in operation.....	18,092
Members and consumers receiving service.....	111,400
Gross electric revenue.....	\$ 4,115,928
TVA Amortization Collections.....	\$ 681,793
Total Revenue.....	\$ 4,797,721
Total Operating Expenses.....	\$ 3,533,086
Balance.....	\$ 1,264,635

Kilowatt Hours Purchased.....	267,945,000
Kilowatt Hours Sold.....	236,140,000
Cost of Power.....	\$ 1,509,743

being 5.63 mills per kilowatt-hour of energy purchased.

Unfortunately it has been impossible to determine the kilowatt hour demand.

Investment per Consumer.....	\$ 171.00
Consumers per Mile of Line.....	6.15
Total Electric Revenue per Mile of Line per Month.....	\$ 22.10
Total Electric Revenue per Consumer per Month.....	\$ 3.59
Percentage of Power Cost to Total Operating Expense.....	42.50
Kilowatt hours Sold per Mile per Month.....	1090
Kilowatt hours Sold per Consumer per Month.....	177
Average Sale Price of Energy per Kilowatt hour.....	2.16

This figure is low, of course, due to a number of
large industrial plants in the area.

(These figures do not include Tennessee 30 Knoxville Public, Tennessee 43 Newport Public, Tennessee 45 LaFollette Public, as no data is available separate from their urban operations. Kentucky 26 Todd, Kentucky 35 Warren, and Kentucky 50 Graves are not included, as they began operations as TVA projects only twenty days before the close of the fiscal year.)

As a matter of information, usage per month of consumers on a few of the projects is as follows: (Consumers shown are averages for the year)

Project	Total Consumers	% Rural	Average Use Per Month			
			Farm	Other	Total	Commercial
Tenn. 19 Rutherford	5653	84	131	124	130	195
Ga. 7 Catoosa	5936	99	74	156	80	116
Miss. 50 Chickasaw	2195	47	48	93	81	168
Tenn. 21 Franklin	7597	64	103	137	117	255
Tenn. 26 Loudon	2004	85	60	144	72	189
Ky. 38 Fulton	707	100	103	78	98	124
Ala. 21 Cherokee	3339	86	37	119	47	110

Cash revenues and investments in the hands of the individual projects, after all interest and debt service due has been paid, varies up to \$112,000:

	Cash	Investment
One project reporting	\$75,000	\$37,000
Another	79,000	-----
Another	39,000	-----
Another	33,000	-----
Another	31,000	10,000

As of October 31, 1942, projects in the TVA area have made prepayments on the principal of their long term debt to REA of \$668,605. These prepayments have been made by twenty-seven projects and vary in amount from \$3,000 to \$87,000.

It is of interest to note that as of October 31, 1942, the number of consumers for the projects shown had increased from the figures of the previous year as shown below. These increases have been made by the installation of services and short secondary extensions during a period when major extensions were prohibited by war conditions.

	1941	1942	Increase
Tenn. 20 Gibson	6318	6746	428
Tenn. 21 Franklin	7242	7597	355
Tenn. 35 Marion	3541	4049	508
Miss. 50 Chickasaw	2130	2195	65
Tenn. 16 Madison	3479	3589	110
Ga. 7 Catoosa	5547	5936	389
Tenn. 1 Meigs	4822	5536	714
Tenn. 19 Rutherford	5244	5653	409
Tenn. 38 Jefferson	2431	2858	427

The "Second Annual Survey of Industries Supplied with Electric Energy by REA Lines", dated January 1, 1941, showed a total for the United States, for its establishments that require transformers of 5 kva capacity or more, of 106,427 kva. Of this, 47,476 kva was in the TVA area.

If you are interested in a more complete explanation of our activities in the TVA area, it is suggested that you read a statement prepared by me for use by the Joint Committee on the Investigation of the Tennessee Valley Authority, which you will find in Appendix A of the Reports and Exhibits of this Joint Committee made pursuant to Public Resolution No. 83, 75th Congress. This report can be secured in our Library.

